CLAIMS

What is claimed is:

1. A method preventing broadcast loops in a point-to-point network, said point-to-point network having a plurality of nodes including at least one network access point, comprising:

connecting said point-to-point network to said shared medium network via said network access point;

defining a plurality of broadcast types for data packets used in said point-to-point network; and

changing a broadcast type of certain ones of said data packets when said data packets cross a network access point service area (NAPSA) or are forwarded from said point-to-point network to said shared medium network.

2. The method according to claim 1, wherein said broadcast types include: a first broadcast type covering a single service area, a second broadcast type covering a single point-to-point network, a third broadcast type covering a single administrative domain, and a fourth broadcast type covering a single point-to-point network and a single administrative domain.

3. The method according to claim 2, wherein said broadcast types are indicated in a header of said data packets.

4. The method according to claim 3, wherein said fourth broadcast type is assigned only to data packets that are carrying a route request.

5. The method according to claim 4, wherein if said route request is an ARP request, then said data packets are limited to a single administrative domain.

6. The method according to claim 2, wherein a data packet assigned said fourth broadcast type may be forwarded from said point-to-point network to said shared medium network by any network access point that is in an administrative domain that includes a source node of said data packet.

7. The method according to claim 6, wherein said step of changing comprises changing a broadcast type of said data packet from said fourth broadcast type to said second broadcast type when said data packet crosses a NAPSA border.

8. The method according to claim 7, wherein said step of changing comprises changing a broadcast type of said data packet from said fourth broadcast type to said third broadcast type when said data packet is forwarded to said shared medium network.

9. The method according to claim 6, further comprising changing a format of said data packet from a point-to-point network packet format to a shared medium network packet format when said data packet is forwarded to said shared medium network.

10. The method according to claim 6, further comprising processing two different versions of said data packet in a destination node, one version received via said point-to-point network, and one version received via said shared medium network.

11. The method according to claim 10, wherein said data packet is carrying a route request, further comprising processing two different versions of said route request corresponding to said two different versions of said data packet.

12. The method according to claim 11, wherein said version of said route request that traverses only said point-to-point network is received by said destination node in a data packet having said second broadcast type, and said version of said route request that traverses both said point-to-point network and said shared medium network is received by said destination node in a data packet having said third broadcast type.

13. The method according to claim 12, wherein both versions of said route request were originally sent by a source node as a single route request in a data packet having said fourth broadcast type.

14. The method according to claim 2, wherein said step of preventing broadcast loops includes storing in a node of said point-to-point network a unique identification for each broadcast type data packet received by said node, and determining for each broadcast type data packet received by said node whether said

data packet was previously processed by said node based on said stored unique identification.

15. The method according to claim 14, wherein said unique identification includes a sequence number generated by a source node of said data packet, an address of said source node, and a broadcast type of said data packet .

16. The method according to claim 15, wherein said step of preventing broadcast loops further includes generating a new sequence number for said data packet if said data packet was transferred across said shared medium network without encapsulation, and keeping said sequence number generated by said source node otherwise.

17. A system for preventing broadcast loops in a point-to-point network, said point-to-point network having a plurality of nodes therein, comprising:

at least one network access point connecting said point-to-point network to a shared medium network;

said nodes configured to generate data packets having one of a plurality of broadcast types used in said point-to-point network, and further configured to change a broadcast type of certain ones of said data packets when said data packets cross a network access point service area (NAPSA); and

said network access point configured to change a broadcast type of certain ones of said data packets when said data packets is forwarded from said point-to-point network to said shared medium network.

18. The system according to claim 17, wherein said broadcast types include: a first broadcast type cover a single service area, a second broadcast type covering a single point-to-point network, a third broadcast type covering a single administrative domain, and a fourth broadcast type covering a single point-to-point network and a single administrative domain.

19. The system according to claim 18, wherein said broadcast types are indicated in a header of said data packets.

20. The system according to claim 19, wherein said fourth broadcast type is assigned only to data packets that are carry a route request.

21. The system according to claim 20, wherein if said route request is an ARP request, then said data packets are limited to a single administrative domain.

22. The system according to claim 18, wherein a data packet assigned said fourth broadcast type may be sent from said point-to-point network to said shared medium network by any network access point that is in an administrative domain which includes a source node of said data packet.

23. The system according to claim 22, wherein said nodes are further configured to change a broadcast type of said data packet from said fourth broadcast type to said second broadcast type when said data packet crosses a service area border.

24. The system according to claim 23, wherein said network access point is configured to change a broadcast type of said data packet from said fourth broadcast type to said third broadcast type when said data packet is forwarded to said shared medium network.

25. The system according to claim 22, wherein said network access point is configured to change a format of said data packet from a point-to-point network packet format to a shared medium network packet format when said data packet is forwarded to said shared medium network.

26. The system according to claim 22, wherein one or more nodes in said point-to-point network are configured to process two different versions of said data packet, one version received via said point-to-point network, and one version received via said shared medium network.

27. The system according to claim 26, wherein said data packet is carrying a route request, said one or more nodes in said point-to-point network further configured to process two different versions of said route request corresponding to said two different versions of said data packet.

28. The system according to claim 27, wherein said version of said route request that traverses only said point-to-point network is received by said destination node in a data packet having said second broadcast type, and said version of said route

request that traverses both said point-to-point network and said shared medium network is received by said destination node in a data packet having said third broadcast type.

29. The system according to claim 28, wherein both versions of said route request were originally sent by a source node as a single route request in a data packet having said fourth broadcast type.

30. The system according to claim 18, wherein one or more nodes of said point-to-point network are configured to store a unique identification for each broadcast data packet received by said node, and determine for each broadcast data packet received by said node whether said data packet was previously processed by said node based on said stored unique identification.

31. The system according to claim 30, wherein said unique identification includes a sequence number generated by a source node of said data packet, an address of said source node, and a broadcast type of said data packet .

32. The system according to claim 31, wherein said one or more nodes of said point-to-point network are further configured to generate a new sequence number for said data packet if said data packet was transferred across said shared medium network without encapsulation, and keep said sequence number generated by said source node otherwise.